

3113 #2



ENTERED

OIPE

RAW SEQUENCE LISTING
PATENT APPLICATION: US/10/081,126

DATE: 03/07/2002 P.6
TIME: 10:01:17

Input Set : A:\AR4951.txt
Output Set: N:\CRF3\03072002\J081126.raw

```

4 <110> APPLICANT: De Vries, Gerald W.
6 <120> TITLE OF INVENTION: Methods of Extending Corneal Graft
7   Survival
9 <130> FILE REFERENCE: P-AR 4951
C--> 11 <140> CURRENT APPLICATION NUMBER: US/10/081,126
C--> 11 <141> CURRENT FILING DATE: 2002-02-22
11 <160> NUMBER OF SEQ ID NOS: 7
13 <170> SOFTWARE: FastSEQ for Windows Version 4.0
15 <210> SEQ ID NO: 1
16 <211> LENGTH: 4113
17 <212> TYPE: DNA
18 <213> ORGANISM: Homo sapiens
20 <220> FEATURE:
21 <221> NAME/KEY: CDS
22 <222> LOCATION: (22)...(4110)
24 <400> SEQUENCE: 1
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26                               Met Gln Arg Gly Ala Ala Leu Cys Leu Arg
27                               1           5           10
29 ctg tgg ctc tgc ctg gga ctc ctg gac ggc ctg gtg agt gac tac tcc 99
30 Leu Trp Leu Cys Leu Gly Leu Leu Asp Gly Leu Val Ser Asp Tyr Ser
31                               15           20           25
33 atg acc ccc ccg acc ttg aac atc acg gag gag tca cac gtc atc gac 147
34 Met Thr Pro Thr Leu Asn Ile Thr Glu Glu Ser His Val Ile Asp
35                               30           35           40
37 acc ggt gac agc ctg tcc atc tcc tgc agg gga cag cac ccc ctc gag 195
38 Thr Gly Asp Ser Leu Ser Ile Ser Cys Arg Gly Gln His Pro Leu Glu
39                               45           50           55
41 tgg gct tgg cca gga gct cag gag gcg cca gcc acc gga gac aag gac 243
42 Trp Ala Trp Pro Gly Ala Gln Glu Ala Pro Ala Thr Gly Asp Lys Asp
43                               60           65           70
45 agc gag gac acg ggg gtg gtg cga gac tgc gag ggc aca gac gcc agg 291
46 Ser Glu Asp Thr Gly Val Val Arg Asp Cys Glu Gly Thr Asp Ala Arg
47 75                               80           85           90
49 ccc tac tgc aag gtg ttg ctg ctg cac gag gta cat gcc aac gac aca 339
50 Pro Tyr Cys Lys Val Leu Leu Leu His Glu Val His Ala Asn Asp Thr
51                               95          100          105
53 ggc agc tac gtc tgc tac tac aag tac atc aag gca cgc atc gag ggc 387
54 Gly Ser Tyr Val Cys Tyr Tyr Lys Tyr Ile Lys Ala Arg Ile Glu Gly
55                               110         115         120
57 acc acg gcc gcc agc tcc tac gtg ttc gtg aga gac ttt gag cag cca 435
58 Thr Thr Ala Ala Ser Ser Tyr Val Phe Val Arg Asp Phe Glu Gln Pro
59                               125         130         135

```

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```
61 ttc atc aac aag cct gac acg ctc ttg gtc aac agg aag gac gcc atg 483
62 Phe Ile Asn Lys Pro Asp Thr Leu Leu Val Asn Arg Lys Asp Ala Met
63 140 145 150
65 tgg gtg ccc tgt ctg gtg tcc atc ccc ggc ctc aat gtc acg ctg cgc 531
66 Trp Val Pro Cys Leu Val Ser Ile Pro Gly Leu Asn Val Thr Leu Arg
67 155 160 165 170
69 tcg caa agc tcg gtg ctg tgg cca gac ggg cag gag gtg gtg tgg gat 579
70 Ser Gln Ser Ser Val Leu Trp Pro Asp Gly Gln Glu Val Val Trp Asp
71 175 180 185
73 gac cgg cgg ggc atg ctc gtg tcc acg cca ctg ctg cac gat gcc ctg 627
74 Asp Arg Arg Gly Met Leu Val Ser Thr Pro Leu Leu His Asp Ala Leu
75 190 195 200
77 tac ctg cag tgc gag acc acc tgg gga gac cag gac ttc ctt tcc aac 675
78 Tyr Leu Gln Cys Glu Thr Thr Trp Gly Asp Gln Asp Phe Leu Ser Asn
79 205 210 215
81 ccc ttc ctg gtg cac atc aca ggc aac gag ctc tat gac atc cag ctg 723
82 Pro Phe Leu Val His Ile Thr Gly Asn Glu Leu Tyr Asp Ile Gln Leu
83 220 225 230
85 ttg ccc agg aag tcg ctg gag ctg ctg gta ggg gag aag ctg gtc ctc 771
86 Leu Pro Arg Lys Ser Leu Glu Leu Leu Val Gly Glu Lys Leu Val Leu
87 235 240 245 250
89 aac tgc acc gtg tgg gct gag ttt aac tca ggt gtc acc ttt gac tgg 819
90 Asn Cys Thr Val Trp Ala Glu Phe Asn Ser Gly Val Thr Phe Asp Trp
91 255 260 265
93 gac tac cca ggg aag cag gca gag cgg ggt aag tgg gtg ccc gag cga 867
94 Asp Tyr Pro Gly Lys Gln Ala Glu Arg Gly Lys Trp Val Pro Glu Arg
95 270 275 280
97 cgc tcc caa cag acc cac aca gaa ctc tcc agc atc ctg acc atc cac 915
98 Arg Ser Gln Gln Thr His Thr Glu Leu Ser Ser Ile Leu Thr Ile His
99 285 290 295
101 aac gtc agc cag cac gac ctg ggc tcg tat gtg tgc aag gcc aac aac 963
102 Asn Val Ser Gln His Asp Leu Gly Ser Tyr Val Cys Lys Ala Asn Asn
103 300 305 310
105 ggc atc cag cga ttt cgg gag agc acc gag gtc att gtg cat gaa aat 1011
106 Gly Ile Gln Arg Phe Arg Glu Ser Thr Glu Val Ile Val His Glu Asn
107 315 320 325 330
109 ccc ttc atc agc gtc gag tgg ctc aaa gga ccc atc ctg gag gcc acg 1059
110 Pro Phe Ile Ser Val Glu Trp Leu Lys Gly Pro Ile Leu Glu Ala Thr
111 335 340 345
113 gca gga gac gag ctg gtg aag ctg ccc gtg aag ctg gca gcg tac ccc 1107
114 Ala Gly Asp Glu Leu Val Lys Leu Pro Val Lys Leu Ala Ala Tyr Pro
115 350 355 360
117 ccg ccc gag ttc cag tgg tac aag gat gga aag gca ctg tcc ggg cgc 1155
118 Pro Pro Glu Phe Gln Trp Tyr Lys Asp Gly Lys Ala Leu Ser Gly Arg
119 365 370 375
121 cac agt cca cat gcc ctg gtg ctc aag gag gtg aca gag gcc agc aca 1203
122 His Ser Pro His Ala Leu Val Leu Lys Glu Val Thr Glu Ala Ser Thr
123 380 385 390
125 ggc acc tac acc ctc gcc ctg tgg aac tcc gct gct ggc ctg agg cgc 1251
```

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126	Gly	Thr	Tyr	Thr	Leu	Ala	Leu	Trp	Asn	Ser	Ala	Ala	Gly	Leu	Arg	Arg	
127	395					400					405					410	
129	aac	atc	agc	ctg	gag	ctg	gtg	gtg	aat	gtg	ccc	ccc	cag	ata	cat	gag	1299
130	Asn	Ile	Ser	Leu	Glu	Leu	Val	Val	Asn	Val	Pro	Pro	Gln	Ile	His	Glu	
131					415					420						425	
133	aag	gag	gcc	tcc	tcc	ccc	agc	atc	tac	tgc	cgt	cac	agc	cgc	cag	gcc	1347
134	Lys	Glu	Ala	Ser	Ser	Pro	Ser	Ile	Tyr	Ser	Arg	His	Ser	Arg	Gln	Ala	
135					430					435						440	
137	ctc	acc	tgc	acg	gcc	tac	ggg	gtg	ccc	ctg	cct	ctc	agc	atc	cag	tgg	1395
138	Leu	Thr	Cys	Thr	Ala	Tyr	Gly	Val	Pro	Leu	Pro	Leu	Ser	Ile	Gln	Trp	
139					445					450						455	
141	cac	tgg	cgg	ccc	tgg	aca	ccc	tgc	aag	atg	ttt	gcc	cag	cgt	agt	ctc	1443
142	His	Trp	Arg	Pro	Trp	Thr	Pro	Cys	Lys	Met	Phe	Ala	Gln	Arg	Ser	Leu	
143																	
145	cgg	cgg	cgg	cag	cag	caa	gac	ctc	atg	cca	cag	tgc	cgt	gac	tgg	agg	1491
146	Arg	Arg	Arg	Gln	Gln	Gln	Asp	Leu	Met	Pro	Gln	Cys	Arg	Asp	Trp	Arg	
147	475					480					485					490	
149	gcg	gtg	acc	acg	cag	gat	gcc	gtg	aac	ccc	atc	gag	agc	ctg	gac	acc	1539
150	Ala	Val	Thr	Thr	Gln	Asp	Ala	Val	Asn	Pro	Ile	Glu	Ser	Leu	Asp	Thr	
151					495					500						505	
153	tgg	acc	gag	ttt	gtg	gag	gga	aag	aat	aag	act	gtg	agc	aag	ctg	gtg	1587
154	Trp	Thr	Glu	Phe	Val	Glu	Gly	Lys	Asn	Lys	Thr	Val	Ser	Lys	Leu	Val	
155					510					515						520	
157	atc	cag	aat	gcc	aac	gtg	tct	gcc	atg	tac	aag	tgt	gtg	gtc	tcc	aac	1635
158	Ile	Gln	Asn	Ala	Asn	Val	Ser	Ala	Met	Tyr	Lys	Cys	Val	Val	Ser	Asn	
159					525					530						535	
161	aag	gtg	ggc	cag	gat	gag	cgg	ctc	atc	tac	ttc	tat	gtg	acc	acc	atc	1683
162	Lys	Val	Gly	Gln	Asp	Glu	Arg	Leu	Ile	Tyr	Phe	Tyr	Val	Thr	Thr	Ile	
163																	
165	ccc	gac	ggc	ttc	acc	atc	gaa	tcc	aag	cca	tcc	gag	gag	cta	cta	gag	1731
166	Pro	Asp	Gly	Phe	Thr	Ile	Glu	Ser	Lys	Pro	Ser	Glu	Glu	Leu	Leu	Glu	
167	555					560					565					570	
169	ggc	cag	ccg	gtg	ctc	ctg	agc	tgc	caa	gcc	gac	agc	tac	aag	tac	gag	1779
170	Gly	Gln	Pro	Val	Leu	Leu	Ser	Cys	Gln	Ala	Asp	Ser	Tyr	Lys	Tyr	Glu	
171					575						580					585	
173	cat	ctg	cgc	tgg	tac	cgc	ctc	aac	ctg	tcc	acg	ctg	cac	gat	gcg	cac	1827
174	His	Leu	Arg	Trp	Tyr	Arg	Leu	Asn	Leu	Ser	Thr	Leu	His	Asp	Ala	His	
175					590					595						600	
177	ggg	aac	ccg	ctt	ctg	ctc	gac	tgc	aag	aac	gtg	cat	ctg	ttc	gcc	acc	1875
178	Gly	Asn	Pro	Leu	Leu	Leu	Asp	Cys	Lys	Asn	Val	His	Leu	Phe	Ala	Thr	
179					605					610						615	
181	cct	ctg	gcc	gcc	agc	ctg	gag	gag	gtg	gca	cct	ggg	gcg	cgc	cac	gcc	1923
182	Pro	Leu	Ala	Ala	Ser	Leu	Glu	Glu	Val	Ala	Pro	Gly	Ala	Arg	His	Ala	
183																	
185	acg	ctc	agc	ctg	agt	atc	ccc	cgc	gtc	gcg	ccc	gag	cac	gag	ggc	cac	1971
186	Thr	Leu	Ser	Leu	Ser	Ile	Pro	Arg	Val	Ala	Pro	Glu	His	Glu	Gly	His	
187	635					640					645					650	
189	tat	gtg	tgc	gaa	gtg	caa	gac	cgg	cgc	agc	cat	gac	aag	cac	tgc	cac	2019
190	Tyr	Val	Cys	Glu	Val	Gln	Asp	Arg	Arg	Ser	His	Asp	Lys	His	Cys	His	

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191																655																660																665																															
193	aag	aag	tac	ctg	tcg	gtg	cag	gcc	ctg	gaa	gcc	cct	cgg	ctc	acg	cag	2067																																																														
194	Lys	Lys	Tyr	Leu	Ser	Val	Gln	Ala	Leu	Glu	Ala	Pro	Arg	Leu	Thr	Gln																																																															
195																670																675																680																															
197	aac	ttg	acc	gac	ctc	ctg	gtg	aac	gtg	agc	gac	tcg	ctg	gag	atg	cag	2115																																																														
198	Asn	Leu	Thr	Asp	Leu	Leu	Val	Asn	Val	Ser	Asp	Ser	Leu	Glu	Met	Gln																																																															
199																685																690																695																															
201	tgc	ttg	gtg	gcc	gga	gcg	cac	gcg	ccc	agc	atc	gtg	tgg	tac	aaa	gac	2163																																																														
202	Cys	Leu	Val	Ala	Gly	Ala	His	Ala	Pro	Ser	Ile	Val	Trp	Tyr	Lys	Asp																																																															
203																700																705																710																															
205	gag	agg	ctg	ctg	gag	gaa	aag	tct	gga	gtc	gac	ttg	gcg	gac	tcc	aac	2211																																																														
206	Glu	Arg	Leu	Leu	Glu	Glu	Lys	Ser	Gly	Val	Asp	Leu	Ala	Asp	Ser	Asn																																																															
207																715																720																725																730															
209	cag	aag	ctg	agc	atc	cag	cgc	gtg	cgc	gag	gag	gat	gcg	gga	ccg	tat	2259																																																														
210	Gln	Lys	Leu	Ser	Ile	Gln	Arg	Val	Arg	Glu	Glu	Asp	Ala	Gly	Pro	Tyr																																																															
211																735																740																745																															
213	ctg	tgc	agc	gtg	tgc	aga	ccc	aag	ggc	tgc	gtc	aac	tcc	tcc	gcc	agc	2307																																																														
214	Leu	Cys	Ser	Val	Cys	Arg	Pro	Lys	Gly	Cys	Val	Asn	Ser	Ser	Ala	Ser																																																															
215																750																755																760																															
217	gtg	gcc	gtg	gaa	ggc	tcc	gag	gat	aag	ggc	agc	atg	gag	atc	gtg	atc	2355																																																														
218	Val	Ala	Val	Glu	Gly	Ser	Glu	Asp	Lys	Gly	Ser	Met	Glu	Ile	Val	Ile																																																															
219																765																770																775																															
221	ctt	gtc	ggt	acc	ggc	gtc	atc	gct	gtc	ttc	ttc	tgg	gtc	ctc	ctc	ctc	2403																																																														
222	Leu	Val	Gly	Thr	Gly	Val	Ile	Ala	Val	Phe	Phe	Trp	Val	Leu	Leu	Leu																																																															
223																780																785																790																															
225	ctc	atc	ttc	tgt	aac	atg	agg	agg	ccg	gcc	cac	gca	gac	atc	aag	acg	2451																																																														
226	Leu	Ile	Phe	Cys	Asn	Met	Arg	Arg	Pro	Ala	His	Ala	Asp	Ile	Lys	Thr																																																															
227																795																800																805																810															
229	ggc	tac	ctg	tcc	atc	atc	atg	gac	ccc	ggg	gag	gtg	cct	ctg	gag	gag	2499																																																														
230	Gly	Tyr	Leu	Ser	Ile	Ile	Met	Asp	Pro	Gly	Glu	Val	Pro	Leu	Glu	Glu																																																															
231																815																820																825																															
233	caa	tgc	gaa	tac	ctg	tcc	tac	gat	gcc	agc	cag	tgg	gaa	ttc	ccc	cga	2547																																																														
234	Gln	Cys	Glu	Tyr	Leu	Ser	Tyr	Asp	Ala	Ser	Gln	Trp	Glu	Phe	Pro	Arg																																																															
235																830																835																840																															
237	gag	cgg	ctg	cac	ctg	ggg	aga	gtg	ctc	ggc	tac	ggc	gcc	ttc	ggg	aag	2595																																																														
238	Glu	Arg	Leu	His	Leu	Gly	Arg	Val	Leu	Gly	Tyr	Gly	Ala	Phe	Gly	Lys																																																															
239																845																850																855																															
241	gtg	gtg	gaa	gcc	tcc	gct	ttc	ggc	atc	cac	aag	ggc	agc	agc	tgt	gac	2643																																																														
242	Val	Val	Glu	Ala	Ser	Ala	Phe	Gly	Ile	His	Lys	Gly	Ser	Ser	Cys	Asp																																																															
243																																																																															

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```
257 ctc atg gtg atc gtg gag ttc tgc aag tac ggc aac ctc tcc aac ttc 2835
258 Leu Met Val Ile Val Glu Phe Cys Lys Tyr Gly Asn Leu Ser Asn Phe
259          925          930          935
261 ctg cgc gcc aag cgg gac gcc ttc agc ccc tgc gcg gag aag tct ccc 2883
262 Leu Arg Ala Lys Arg Asp Ala Phe Ser Pro Cys Ala Glu Lys Ser Pro
263          940          945          950
265 gag cag cgc gga cgc ttc cgc gcc atg gtg gag ctc gcc agg ctg gat 2931
266 Glu Gln Arg Gly Arg Phe Arg Ala Met Val Glu Leu Ala Arg Leu Asp
267 955          960          965          970
269 cgg agg cgc ccg ggg agc agc gac agg gtc ctc ttc gcg cgg ttc tcg 2979
270 Arg Arg Arg Pro Gly Ser Ser Asp Arg Val Leu Phe Ala Arg Phe Ser
271          975          980          985
273 aag acc gag ggc gga gcg agg cgg gct tct cca gac caa gaa gct gag 3027
274 Lys Thr Glu Gly Gly Ala Arg Arg Ala Ser Pro Asp Gln Glu Ala Glu
275          990          995          1000
277 gac ctg tgg ctg agc ccg ctg acc atg gaa gat ctt gtc tgc tac agc 3075
278 Asp Leu Trp Leu Ser Pro Leu Thr Met Glu Asp Leu Val Cys Tyr Ser
279          1005          1010          1015
281 ttc cag gtg gcc aga ggg atg gag ttc ctg gct tcc cga aag tgc atc 3123
282 Phe Gln Val Ala Arg Gly Met Glu Phe Leu Ala Ser Arg Lys Cys Ile
283          1020          1025          1030
285 cac aga gac ctg gct gct cgg aac att ctg ctg tcg gaa agc gac gtg 3171
286 His Arg Asp Leu Ala Ala Arg Asn Ile Leu Leu Ser Glu Ser Asp Val
287 1035          1040          1045          1050
289 gtg aag atc tgt gac ttt ggc ctt gcc cgg gac atc tac aaa gac ccc 3219
290 Val Lys Ile Cys Asp Phe Gly Leu Ala Arg Asp Ile Tyr Lys Asp Pro
291          1055          1060          1065
293 gac tac gtc cgc aag ggc agt gcc cgg ctg ccc ctg aag tgg atg gcc 3267
294 Asp Tyr Val Arg Lys Gly Ser Ala Arg Leu Pro Leu Lys Trp Met Ala
295          1070          1075          1080
297 cct gaa agc atc ttc gac aag gtg tac acc acg cag agt gac gtg tgg 3315
298 Pro Glu Ser Ile Phe Asp Lys Val Tyr Thr Thr Gln Ser Asp Val Trp
299          1085          1090          1095
301 tcc ttt ggg gtg ctt ctc tgg gag atc ttc tct ctg ggg gcc tcc ccg 3363
302 Ser Phe Gly Val Leu Leu Trp Glu Ile Phe Ser Leu Gly Ala Ser Pro
303          1100          1105          1110
305 tac cct ggg gtg cag atc aat gag gag ttc tgc cag cgc gtg aga gac 3411
306 Tyr Pro Gly Val Gln Ile Asn Glu Glu Phe Cys Gln Arg Val Arg Asp
307 1115          1120          1125          1130
309 ggc aca agg atg agg gcc ccg gag ctg gcc act ccc gcc ata cgc cac 3459
310 Gly Thr Arg Met Arg Ala Pro Glu Leu Ala Thr Pro Ala Ile Arg His
311          1135          1140          1145
313 atc atg ctg aac tgc tgg tcc gga gac ccc aag gcg aga cct gca ttc 3507
314 Ile Met Leu Asn Cys Trp Ser Gly Asp Pro Lys Ala Arg Pro Ala Phe
315          1150          1155          1160
317 tcg gac ctg gtg gag atc ctg ggg gac ctg ctc cag ggc agg ggc ctg 3555
318 Ser Asp Leu Val Glu Ile Leu Gly Asp Leu Leu Gln Gly Arg Gly Leu
319          1165          1170          1175
321 caa gag gaa gag gag gtc tgc atg gcc ccg cgc agc tct cag agc tca 3603
```

RAW SEQUENCE LISTING ERROR SUMMARY
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Please Note:

Use of n and/or Xaa have been detected in the Sequence Listing. Please review the Sequence Listing to ensure that a corresponding explanation is presented in the <220> to <223> fields of each sequence which presents at least one n or Xaa.

Seq#:5; Xaa Pos. 2,3,4,5,6,7,8,9,10,11,13

Seq#:6; N Pos. 1,2,4,8,9,10,11,12,13

Seq#:7; N Pos. 1

VERIFICATION SUMMARY

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L:11 M:270 C: Current Application Number differs, Replaced Current Application No
L:11 M:271 C: Current Filing Date differs, Replaced Current Filing Date
L:751 M:281 W: Numeric Fields not Ordered, <221> Sort in ascending order!
L:755 M:258 W: Mandatory Feature missing, <220> not found for SEQ ID#:5
L:756 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:5 after pos.:0
L:768 M:281 W: Numeric Fields not Ordered, <221> Sort in ascending order!
L:772 M:258 W: Mandatory Feature missing, <220> not found for SEQ ID#:6
L:773 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:6 after pos.:0
L:783 M:281 W: Numeric Fields not Ordered, <221> Sort in ascending order!
L:787 M:258 W: Mandatory Feature missing, <220> not found for SEQ ID#:7
L:788 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:7 after pos.:0